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Education for Australia's information future

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Digital disruption and an increasingly networked society drive rapid change in many professions and a corresponding need for change in tertiary education. Across the world, information education has, to date, prepared graduates for employment in discrete professions, such as librarianship, records management, archives, and teacher librarianship. However, contemporary information practices are less defined and are demanding of new professional skill-sets and understandings. This paper reports a study that consulted Australia's tertiary academics about the current circumstances of information education in the academy and elicited a vision and a concern for future directions in Australian information education.

Keywords: information; tertiary information; information academics; digital information

Introduction

Numerous professions are impacted by the fast-paced, digital and networked society of the present time. Journalism confronts a shift from print to online media and the radical changes in client expectation and behaviour that result. Most successful marketing campaigns must now consider and integrate social media technologies. Likewise, networked, digital information has disrupted professional traditions in record-keeping, librarianship and archives in many countries around the world. The once, well-defined discipline of librarianship exemplifies this phenomenon. Several decades back, the management of physical information objects and space, and face-to-face client interactions, were core to librarianship. Today, however, librarianship has new foci – online environments, digital information, remote clients whose library access is managed by via the internet and social media. These significant changes are shared with other information professions. Accordingly, Partridge et al. (2011) claim it timely to shift the discourse from insular profession and embrace the converging concerns of all information traditions. This paper adopts Partridge et al.'s (2011) stance and attends to a single information discipline, profession and program. It acknowledges that the discipline of information studies is nascent, and less defined and recognisable than those that preceded it.

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Digital information trends towards more social, emergent and mobile attributes and has less attributable authority, creating large-scale shifts in the necessary skills, attitudes and knowledge of the 21st century information professional. A corresponding shift is taking place in their education (Partridge, 2011). On Australian and international fronts, diverse stakeholders in information education acknowledge the importance of designing educational approaches that are responsive to the rapid and ongoing technological change of the evolving information age. A dynamic curriculum is recognised as critical in providing graduates with the attributes required for information work in the twenty-first century.

Irrespective of the employment destinations of graduates, it is evident that pathways to the information profession have and will continue to broaden. As a result, there is greater emphasis on “educating graduates to work in broader information environments and to consider new career paths in non-traditional agencies and organisations” (Yu & Davis, 2007). This has important ramifications for curriculum models, which contain legacy support for “traditional definitions of the roles, functions, and audiences of archives, libraries, and museums” (Trant, 2009, p. 369). Globally, there is a call to accommodate the demands of expanding professional contexts within the information curriculum.

Course recognition by traditional professional associations poses a challenge for contemporary curriculum development. In Australia, as in the rest of the world, professional associations continue to represent the traditional professional role. The Australian Library and Information Association (ALIA) is responsible for accrediting courses that allow graduates to achieve professional status as librarians. Other professions within the information sector are represented by the associations of the Australian Society of Archivists and Records and Information Management Professionals Australasia (RIMPA). With differing curriculum specifications from each accrediting body, it is challenging to build a cohesive information curriculum.

Recognising the significant and global challenges and changes facing current and future information education, the opportunity to respond arose through a Australian national research project: *Re-conceptualising and re-positioning Australian library and information science education for the twenty-first century*, which was funded by the Australian Learning and Teaching Council. The project was undertaken with a project team of 12 university and vocational information academics from 11 institutions around Australia between November 2009 and December 2010. The purpose of the project was to establish a consolidated and holistic picture of national information education and to frame a cohesive and sustainable approach that will benefit the digital information future of Australia and beyond. Recognising three major stakeholders in the education process the project team framed three areas for consideration: students, industry and the tertiary education sector. This paper reports on one of the three sub-studies - the tertiary information education sector.

The literature

The evolving nature of the information profession presents significant implications for tertiary education. For some decades, information graduates have taken on new and revamped roles in traditional contexts. Middleton (1994) noted:

The apparent convergence of information handling processes engendered by technology has led to suggestions of an associated convergence of disciplines. The term ‘information professional’ itself is an indicator of this process, providing an umbrella for a combination of skills formerly attributed to separate sectors of the workforce (Middleton, 1994, p. 1).

More recently, a report published by the Special Libraries Association in North America (Abels, Jones, Latham, Magnoni, & Marshall, 2003) reflected ongoing expansion in information-related employment, noting that information professionals now include knowledge managers, information officers, information brokers, curators, content managers, consultants and web developers. Increases in the number of graduates finding employment outside traditional roles have drawn comment about the need for graduates to be equipped with a new range of transferable skills (Colvin, 2009; Markgren, Dickinson, Leonard, & Vassiliadis, 2007).

A range of long-standing problems and concerns confront information education on a global basis. In 2004, Michael Gorman, then President of the American Library Association declared that there was a “crisis in LIS education” (2004, p. 376). These views were echoed by Dillon and Norris (2005), Mulvaney and O’Conner (2006), Seavey (2005), and Stoffle and Leeder (2005) who all provide comment on changes needed in information education. Matters of concern include: the absence of a core curriculum for the information discipline; a perceived gap between education and practice; and the need for ongoing professional development and learning. Australian scholars contribute to the international discourse. Harvey asserts that “something’s amiss with university-based education for librarianship” (2001, p. 15), while Myburgh (2003, p. 214) argues that a “fresh approach needs to be taken” to information education and continuing professional development.

Hallam (2007) notes particular challenges for Australian information education that are multidimensional and interrelated. The range of professional qualifications provided at the university level is “one of the significant educational issues in the Australian LIS sector” (Hallam, 2008, p. 23). The International Federation of Library Associations and Institutions (IFLA) states that “students should acquire a broad general education (from other disciplines) as a significant preparatory component of the total education program for the library/information professional” (Daniel, Lazinger & Harbo, 2000, para. 8). Yet, postgraduate qualifications within the information sector are rarely rewarded with higher levels of remuneration therefore providing little incentive for students to study at this level.

The ageing information academic is also cited as an important issue (Hallam, 2007). Genoni (2005a) partly attributes this situation to the rapid expansion of Australian information education in the late 1970s and 1980s when a considerable number of academics were recruited. The situation highlights an impending need to attract new information academics. Genoni (2005a) however, commented on limited incentives to attract information professionals into teaching careers.

Boundaries between paraprofessional and professional roles within the information industry have blurred over time. In discussing vocational education for the information profession, Carroll (2002) notes that competency standards and national qualification frameworks have created a situation whereby vocational educational outcomes are dovetailing with those of universities. Consequently, new graduates can find themselves “functioning in that grey area inhabited by both the professional and paraprofessional” (Carroll, 2002, p. 123).

Australian information education continues to balance practical and theoretical learning. Hallam (2007) writes “there are clear expectations that students should acquire a high level of theoretical knowledge, yet there is also an overt demand for practical skills”. Information education has shifted from its vocational roots and gradually been established as a research-based academic undertaking. There is a tendency for tertiary information

education to distance itself from the historical focus on practical training (Audunson, 2007).

Hallam (2007), reports an imbalance when international comparisons are made between the national population and the number of institutions providing information education. Australia has an abundance of information programs. The number of students is considerably less than what is typically found in major disciplines such as business or law. Harvey and Higgins (2003) note the challenge this poses for information education stating that “in the current funding context of tertiary education in Australia, maintaining student numbers is essential for program survival” (p. 152). Adding further tension to this situation is the fact that over recent years the number of information students has declined (ALIA, 2011; Poynton, 2008).

Little is reported about the people who are responsible for information education. Scholars suggest that information professionals and academics inhabit two different worlds and that very rarely do these worlds collide. Moran (2001) notes that “many librarians have little firsthand experience with library education after they graduate” (p. 54). Similarly, Feather (2003) contends that the vast majority of information practitioners “have not stepped foot into an LIS department since the day [they] left” (p. 40). Given that the future of Australia’s information industry hinges in large measure on the quality of new graduates entering the profession, and that academics are pivotal in their supply, it is time to bring these two worlds closer together. This paper presents key findings on the experiences, perceptions, values and challenges of tertiary information academics in Australia.

Research design

This paper reports only from the tertiary education sub-study and describes the research methods of that portion of the larger project. With a focus on developing an understanding of current information academics and programs of study, the sub-study aimed to critically review the realities and concerns of information academics in Australia, the nature and context of information education programs in Australia and the key national and international trends and priorities that will impact on the future of information education.

Self-administered questionnaires and semi-structured interviews were used for data collection. The questionnaire consisted of 53 questions that provided both quantitative and qualitative data from those who teach in tertiary information programs. The instrument was divided into five sections: demographic, teaching and learning; publications, projects and research; service; perceived issues and challenges; and the future of education for the information professions. Participants were recruited via information educator e-lists and emails to heads of schools and departments for further distribution. Whilst it is not possible to determine the exact numbers of information academics at any one time, the researchers were able to estimate that 150 individuals received invitations to participate (Partridge et al., 2011). Of the 110 responses, data cleansing resulted in 69 valid responses that were used in the analysis. The valid response rate was approximately 46%.

Semi-structured interviews were used to gather data from the coordinators of Australian tertiary information programs. Semi-structured interviews were an appropriate choice for this study because they enabled collection of people’s views, opinions and experiences (Arksey & Knight, 1999). Program coordinators hold a unique position within information education. As “curriculum leaders” (Southwell, West, & Scoufis, 2008), they “directly help faculty members, administrative leaders, and professional support persons

improve the quantity and quality of student learning [and] regularly lead decision-making and action-taking processes in curriculum, instruction, and assessment of student learning” (Ervay, 2006, p. 78). They have a pivotal role and can provide unique insight.

Personalised emails were sent to twenty-three program coordinators (identified by the institutional websites) inviting them to take part in the study. Eleven coordinators agreed to participate in the interview. Despite every effort to ensure equal representation of VET and higher education institutions, only two coordinators from the VET sector agreed to participate. One-on-one interviews were conducted in October and November 2010 by telephone or Skype (an internet voice/video application). There was no pre-determined length for the interviews and participants were free to continue talking for as long as they wished. On average the interviews lasted 40 minutes.

The data arising from the interviews, were captured in digital audio format, and were transcribed professionally. In an inductive approach to analysis, the data were coded to reveal patterns and themes across all of the studied information programs. Initial open coding was conducted in a detailed scrutiny of the data. After each interview the researchers spent time listening to the audio recordings and reviewing the transcripts to identify the open codes. In a process of constant comparison (Charmaz, 2006) the most prominent open codes, as well as higher level constructs resulting in the amalgamation of open codes, were used to identify the themes presented in this paper. This approach provided a theoretical freedom to approach a complex body of data and reveal themes and insights without pre-existing expectations or existing coding frames.

The current situation in the tertiary sector

Five key themes emerged from the analysis of the qualitative interview data. They are: the teaching team; location in the academy; programs; accreditation; and students. Each theme is discussed separately below, although it is important to note that the themes are inter-related. Quotes from participants have been included to elaborate the discussion of each theme. When relevant, quantitative data from the questionnaire is reported to enhance the discussion of themes.

The teaching team

The staffing of information programs is a paramount concern for coordinators. Whilst Australia has one large school of information studies, the majority of information programs in Australia are small in size. Concerns associated with small programs and a limited number of staff were expressed: *“we are a fairly small team so we work pretty hard to get all the courses up and running for the students each study period, we are full on”*. Small teams require many information academics to work long hours: *“very few staff I know work less than 50 hours per week”*. Economies of scale mean that great demands are put on individuals to continue the development of programs.

The impact of a small team of information academics on the capability of staff to engage in research was significant: *“most of us are pushed with teaching, marking and all the administration and it doesn’t leave us a lot of time to do research”*. To overcome the challenge of finding time for research activities, one participant noted that *“we try and align ourselves as best as we can with research programs that are ongoing”*. Implications were also noted for supervision of higher degree research students and the capacity of staff to supervise: *“I am pretty much committed with the PhD students I can take and the others are pretty much full too”*.

A small team, however, can provide the opportunity to strengthen engagement with

industry practitioners by inviting them to participate in teaching as casual or sessional staff: *“they will come and either tutor in a unit with us, or occasionally they will teach the entire unit”*. Despite the drawback of limited permanent staff, the coordinators noted that using industry professionals helped keep the information curriculum in step with current practice and provided different perspectives of the ever-changing information landscape. The difficulty, however, in locating quality sessional staff was noted:

it isn't easy to encourage teacher librarians to be tutors because they often have very busy professional lives already and the other difficulty is a larger number of teacher librarians will have a Graduate Diploma rather than a Masters and it is really a very old qualification so we have to think carefully about employing people with that kind of background.

The recognition that many academics are of retirement age and that few people are studying PhDs to replace the disciplinary expertise was a concern. Small teaching teams may lead to many information academics teaching subjects in areas in which they have neither expertise nor qualifications. These issues also apply to the recruitment and appointment of new full-time members to the team. There is little interest or incentive among practicing information professionals to work towards a PhD: *“finding the right staff who have professional and PhD qualifications is difficult because there are not very many people in the industry who have PhDs. Finding the right person can take up quite a lot of time”*.

Location in the academy

The questionnaire data revealed various locations for information programs within the academy. Ten different overarching faculty disciplinary bases, including information technology (35.4 per cent), education (23.1 per cent), business (16.9 per cent) and humanities (12.3 per cent) were revealed. Two thirds of the information academics who completed the questionnaire agreed that the organisational unit, in which they were located, was a good fit for the information discipline. It appeared that information studies was able to easily fit within a number of different parent domains: *“grouping computer and information studies together works well for the students and the staff”*; *“education and our discipline have a lot of synergies”*; *“humanities is a good fit”*. Many of the program coordinators expressed similar views: *“happy with the school of IT”* and *“education is the right spot for us”*.

Whilst the vast majority of academics were satisfied with the placement of information education within the organisation, a number (18 per cent) were not. Much of the interview discussion focussed on the challenges of being embedded within, or subservient to, another discipline. Concern about being *“marginalised”* or *“getting lost”* was highlighted, as one participant noted *“it's not that there is any friction or any issues, it's just that we see the world from a different view”*. Concern was raised about the poor theoretical and professional fit of the information discipline to many of the larger organisational units: *“while there are some connections with business, realistically, in practice, the link is tenuous”*. One participant reported that members of the information teaching team were required to teach subjects within other degrees relevant to the broader disciplinary field of their faculty. They noted that not being ‘dedicated’ to the information discipline created difficulties in concentrating their efforts on supporting and building the program.

A strong sense of pragmatism accompanied the locating of information studies in the academy: *“library studies is one of these areas that gets shifted all the time”*; *“the alignment of LIS is more political than sensible at times and it would be institution dependant”*. The trans-disciplinary nature of information studies was also noted: *“it's one of those areas that can be adapted to a discipline”*. Conversely another participant

concluded that *“LIS has no real fit in any faculty”*. Whether in a Faculty of IT or Arts or Business, program coordinators noted the positive relationships they had built within the faculty and the strengths that each particular area brings to the program; different faculties provide different opportunities for collaboration and learning. One participant commented: *“I don’t have a view that it should be in one place or another; I really do think it lives or dies by the personalities and the people and the team that you’re with; and the manager who oversees the program”*.

Although information programs within Australian universities and VET institutions are distributed throughout different faculties, there is a strong sense of program ownership. One of the participants argued that although they are *“beholden”* to the faculty in terms of the number of subjects they can offer, they had a good deal of autonomy in curriculum design. Another participant reported that the program team was devoted to information education, and felt significant ownership of the program: *“we’re passionate about our area and we’re certainly passionate about the kinds of subjects we teach...and yes we very much feel that we own it. We certainly own it”*.

Although the integration of information programs with other disciplines sometimes results in productive alliances it also reflects a lack of clear identity in the academy (Harvey, 2001; Harvey & Higgins, 2003). Hallam (2006) holds that information studies is a niche discipline and the forced alliance with a myriad of disciplines means that information programs often find their autonomy and identity endangered.

Programs of study

Questionnaire participants were invited to consider the various levels of information education and to signal their approval or disapproval. Figure 1 reveals that a little over 80% of participants deemed a Masters by coursework to be an appropriate level, approximately 60% valued a Bachelor degree, and 60% of participants considered a Graduate Diploma as an appropriate program level. The debate about the most appropriate level of qualification to meet the diverse and changing needs of Australia’s information profession is current and unresolved. The perspectives of information academics mirror that debate and provide little clarity in identifying a single most appropriate level of information education.

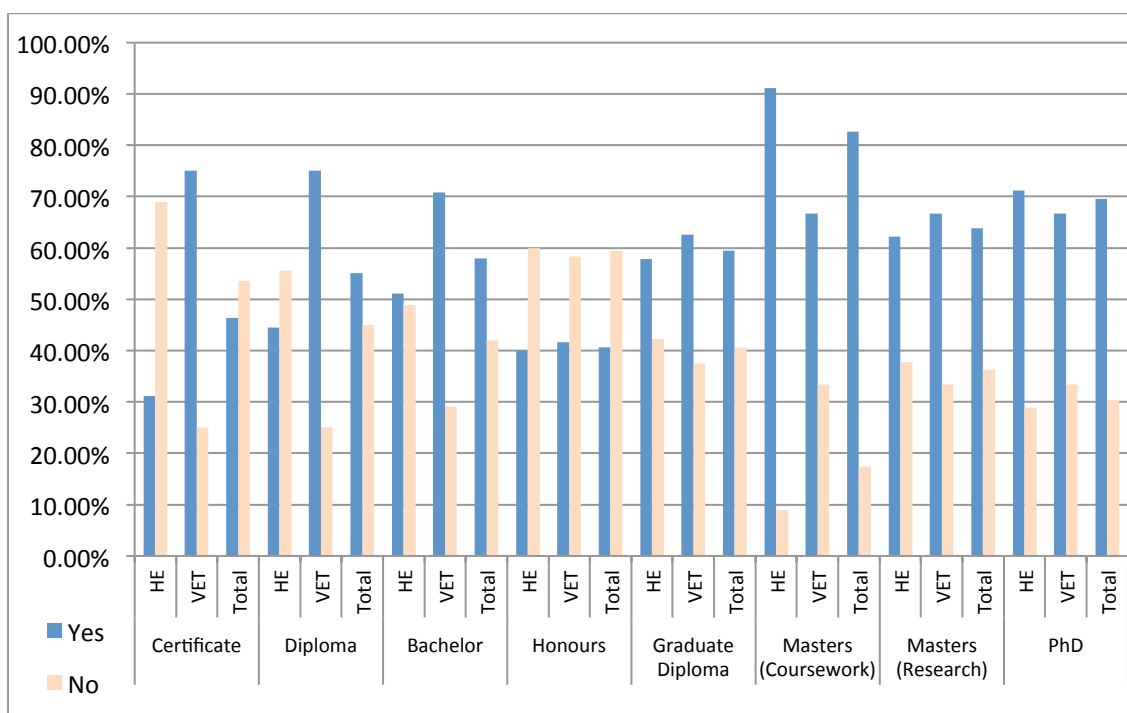


Figure 1 Information academics views on program level

Comments from the interviewed program coordinators reveal mixed and multilayered thinking around qualifications. Some believed it is *“important to provide a range of pathways into the profession”* while others questioned the relevance of specific levels: *“I wonder whether there is a role for library technician qualifications anymore?”*; *“Bachelors? don’t bother”*; *“the Graduate Diploma is useless”* and *“should the Masters to be in line with the rest of the world”*.

Program coordinators acknowledged a strong need for programs to move into an online or more flexible mode of delivery. One participant concluded *“if you don’t do it, I think you’re doomed”*. It was, however, noted that this would bring both benefits and challenges. Importantly, it would require information academics to *“step up to the plate and change their practices to reflect changes in technology and changes in the sort of study habits of their client group”*. Another participant pointed out that moving to this style of delivery is extremely time consuming and is not always appreciated by management who believe incorrectly that *“online learning is somehow going to be cheaper and less time consuming to offer”*.

Technology was listed as a key factor for educational success in the online environment. Some of the participants expressed dissatisfaction with the tools available to them for online delivery and noted that technology could be a barrier for students. Whilst courses have the potential to provide a multitude of online learning experiences, much of the learning is dependent on the student’s hardware, software and internet connection. This is of particular relevance in Australia where high speed Internet access is not guaranteed and many distance education students are located in regional areas.

The program coordinators expressed their concern for students’ feeling of isolation and disconnection within online programs and suggested that it is difficult to create a learning community. One university coordinator believes that encouraging and supporting students who are unsure and having trouble with online delivery is the most challenging aspects of

the online-only program. However, the majority of the program coordinators agreed that students value the option of online or blended learning modes.

Despite the challenges of online delivery, program leaders realise there are significant benefits and are optimistic about online delivery. Online options are essential for Australia's geographically disparate student body and offering a flexible delivery mode means students can more easily participate in learning activities. Some coordinators note that they have seen an increase in student peer-assisted learning within online environments. Through the use of discussion boards and wikis, students are drawing from each other's strengths and experiences to collaborate in virtual environments.

The provision of professional development (PD) programs was considered. Participants were asked to comment on whether their institutions are delivering, or planning to deliver PD to industry. Most institutions did not offer short-course PD, the primary reasons being: lack of time, funds and staff: *"we just don't have the teaching staff to do that, we are absolutely flat out, getting into the PD area would be difficult for us"*. Opinions on whether higher education institutions should offer short-course PD were diverse. One university coordinator argued that universities have *"a great deal to contribute"*. However, many others believed that PD does not belong in the university. One coordinator prioritised research over PD saying: *"for me the university is a place [for] higher education, not becoming a trainer"*. Formal study within the academy was favoured: *"you have to actually champion the professional qualification gained at university level ... keep it quite special and unique"*.

Accreditation

Course accreditation by professional associations is an item of concern for the coordinators of information programs. Accreditation was noted and acknowledged as having a strategically important role within information education: *"I've come to appreciate more of the importance of being accredited"*. Accreditation helps to *"reassure students"* as to the quality of the program, and employers and *"government are likely to be influenced by the fact that we're dealing with authenticated standards"*.

However, the accreditation of courses was not without its challenges. There was great concern about the accreditation process and the *"bureaucratic ways of doing things"*. One participant observed *"[it] is an enormous drain and the previous time it took days and days to get through the whole process, when you are bogged down in that kind of adminstrivia it takes you away from teaching"*. The accreditation process was reported to be unrealistically demanding and repetitive of existing university and government quality processes. The growing accountability of the tertiary sector to government quality processes and regulatory bodies were thought to an adequate assurance of rigor in the policy and procedures that surrounded information courses. A lack of understanding of the educational context by professional associations was also raised: *"They should get a better idea of how universities operate and what is actually realistic and reasonable to expect to do to get through their accreditation process"*.

Concern was raised regarding the number of different professional associations with narrow interests offering accreditation, and one participant commented, *"too many little territories, little empires"*. The need for an *"overall single empire"* was highlighted. The challenges of meeting the individual and highly specific needs of each association were noted, however, it was acknowledged that individual freedom and autonomy in program design was still possible: *"we've managed to do things our own way, but we're able to map what we do towards the body of knowledge"*.

Linked to the issue of accreditation was that of program curriculum. University coordinators were in general agreement about the importance of balancing practical experience with theoretical education, at both undergraduate and postgraduate levels. One coordinator believes that theory and practice are *"very closely connected"* and that it is *"essential to have a theoretical base in order to build practice [...] theory enables you to interrogate what's going on [...] and work towards innovative approaches"*.

The challenge in teaching practical skills to an increasingly diverse set of students, studying in a subtly different information area, was reported. For example, teaching one particular form of cataloguing may benefit librarian students, but may not be useful to students in another information practice: *"the best that we can do is to provide them with enough understanding and the kind of framework and encouragement to be adaptive"*. VET coordinators agreed that balancing theory and practice is important; however, it was sometimes a challenge due to the less flexible nature of VET training packages that mainly emphasise practice.

Students

Program coordinators were asked to consider the students of information programs. Coordinators described their students as diverse and difficult to typecast. Information students are diverse in their backgrounds, age, and program expectations and seek employment in a wide range of organisations. The majority of students are domestic with a representation of international students in all courses, except teacher-librarian programs. Program coordinators predicted that the diversity of commencing students will amplify over time, citing the convergence of disparate information professions as the primary influence. Teacher-librarian program coordinators stated that their student cohort has changed very little in the past five years. Most students entering a teacher-librarian program are mature-aged and looking to move away from classroom teaching. Students in VET sector information programs are generally older and seeking a career change.

Coordinators of information postgraduate programs reported changes in the student profile in recent years. Students entering information postgraduate programs are younger. *"More and more students are coming straight from university for 'job skilling'"*. The majority of these students are from an arts or humanities background. Coordinators predicted that the trend of younger students, entering into postgraduate information studies directly from university will continue, in order to support a 'credentials creep' that calls for postgraduate qualifications in some information professional positions.

The recruitment of students into information studies comes in various forms. Many program coordinators indicated that they rely on the websites of professional associations. Whilst industry conferences and seminars were also used for recruitment, it was not the best way to interact with potential students. Most program coordinators cited 'word of mouth' as the most valued means of disseminating information about their program and attracting new students. Funding for student recruitment was identified as a challenge, particularly for information programs situated in larger faculties and those offered as majors, rather than standalone degrees. One coordinator commented on their university's attitude to information programs: *"we are seen as a niche market, and they don't advertise niche markets"*.

The employer's influence was noted in a student's decision to study: *"hard to attract people in the course if their own employer doesn't see that as a priority"*. The *"age old issue of female dominated and not being sexy"* was also identified by one participant as a barrier to attracting students. The challenges associated with trying to attract students

when there are so many information programs to choose from nationally was identified, but was also noted that this situation was not likely to change: *“there are far too many programs but no one of us is going to give away and in fact its hugely political issue, even within institutions”*. Looking to the future one participant observed: *“I think in a country of our size having this sort of education in every state is something that will contract and a couple of big players will come out of it”*.

Looking ahead

Information program coordinators were asked to reflect on the changes that may occur in their discipline in the coming years. Most agreed that the on-going impact of information technologies would continue to drive significant change to the information sector, and education for information professionals. The convergence of information skills, approaches and careers will continue to develop, as will a growing awareness that an information qualification must encompass a diverse set of abilities.

Nationally and internationally information education is following industry direction and is moving from a focus on specific agencies (eg. libraries, archives) to a broader information landscape. This shift requires a curriculum that is appropriate for a broad and diverse professional base. Developing such a curriculum so that graduates can take their place as successful professionals within an evolving information sector is a significant challenge. Doll (1986) proposes that as society’s view of the post-modern world is increasingly shaped by notions of multiple realities, emergence, unpredictability and self-organisation, and explained by complexity and chaos theories, curriculum models should follow suite. A “measured curriculum” belongs to a world view of reductionism, objectivity and predictability (Doll, 1986, p. 11). The dynamic and emergent nature of digital information may be better supported by Doll’s (1986, p. 14-15) “transformative curriculum” which “emphasizes the active and the reflective” and values knowledge as a process of construction. In this way, programs of study that are adaptable and attuned to an ever-changing world of digital information can be crafted.

With more tertiary information programs per capita than many other countries (for example, UK, USA, and Canada) Australia’s tertiary education providers are competing for a smaller pool of students. A correspondingly small number of information academics within most institutions has implications for program quality, research performance, workload and burnout. Small student and staffing numbers increases the vulnerability of information programs and the discipline more generally. The future will be served by information programs that are sustainable, attractive and competitive within the national and international market.

There is a growing focus on research output, quality and performance within Australian universities. Research and innovation are identified as crucial to Australia’s future. For the information discipline to have a sustainable place within the Nation’s higher education sector, it must attend to research activity, and build a stronger research profile. This can be achieved in part by a larger number of information higher degree research students. The challenge for information education is to continue to develop a strong and active research culture, including vigorous higher degree research programs, both within and across practice and the academy.

Australia’s information education must continue to provide innovative and quality learning environments that meet students need for greater flexibility and variety in their studies. Program coordinators foretell that online and/or blended learning will become increasingly prevalent in future years. Accordingly, information academics will need to

continue to develop their skill and knowledge in online pedagogy. They will also need to continue to build their scholarly approach to teaching practices and provide avenues to support the scholarship of teaching and learning. A strong culture of quality teaching and learning, both within and across institutions, will require constant attention.

Conclusions

Acknowledging that tertiary education itself is buffeted by social and political forces of constant change, this study set out to critically review the realities, contexts, trends and priorities for information education. It reveals a number of important trends and challenges that are reported in this paper. The study confirms that information education takes place in a context of multi-faceted change. Creating, storing, providing and seeking information in the 21st century is predominantly a digital concern and the traditional roles of information professional are challenged to adapt and change in ongoing and undetermined ways. The convergence of isolated professions such as record-keeping and librarianship is clearly signalled by information academics and every attempt is made to alter the curriculum to provide industry-ready graduates.

A particular challenge for Australian tertiary information education is the small size of programs and teaching teams within many institutions. Teaching staff must take up the many responsibilities inherent in offering a program and are often located within a parent faculty or school that considers them niche. Research activity and output are jeopardised by the effort that the academic team must devote to teaching. However, opportunities are identified for multidisciplinary interaction with the surrounding disciplines. Wilson (2006) writes of a dispersed disciplinary interest in all aspects of information which has become the “life blood of society” (p. 682). Information issues have the full attention of a broad spectrum of society and, as the worldwide web continues to expand in its reach and relevance, it places responsibility for information in the hands of varied and multiple actors. Locating information programs alongside other disciplines in the academy enables a valuable synergy.

Tertiary information education in Australia has not evolved to favour a particular level, be it vocational, undergraduate or post-graduate. The level of education will continue to be part of the complexity and flux, which surrounds the programs and the curriculum. The use of the online environment for information education, however, is a clear and strong direction for the future. A resounding sense of its importance for sustainable and flexible teaching, combined with suitable pedagogy, is revealed in this research. The provision of PD for existing information professionals stretches the capacity of many tertiary information programs and a preference for award courses and research in universities is apparent.

Accreditation of information courses by professional associations is considered an important aspect of tertiary education and the industry it serves. However, the extensive and bureaucratic nature of the process is considered in an unfavourable light. In addition, the multiple associations from whom accreditation must be sought create additional administration and conflicting requirements. This situation does not reflect the convergence of the information profession that is otherwise well documented and debated.

This national study begins to unveil the issues facing just one of the many disciplinary bases whose curriculum is impacted by digital disruption. It has an intentional focus on information, which is situated in a rapidly evolving technological landscape and shifting paradigms of use. It provides an approach that other disciplines may follow. The study reveals and documents the significant stresses and opportunities that face tertiary

information education in Australia and reveals insights and directions that are pertinent to international tertiary information education. It is, however, just a beginning and should be extended to better understand the socio-political influence of the surrounding tertiary education sector and to gain deeper theoretical perspectives. Australia's information future requires academics, industry and professional associations to collaboratively produce graduates that will continue to adapt and make real contribution to the circumstances that surround 21st century information.

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